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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,547	10/19/2001	James W. Willen	RA-5368	7125

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EXAMINER

TRUONG, CAMQUY

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,547

Applicant(s)

WILLEN ET AL.

Examiner

Camquy Truong

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-26 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A. The following terms lack proper antecedent basis:

- i. The inventive enhancement – claims 1-4;
- ii. Said any tasks pending – claim 12;
- iii. Said next assigned task – claim 12.

- B. The following claim language is indefinite:

- i. As to claims 1-26, the lack and, in many cases, misuse of punctuation makes it very difficult to determine exactly which units are connected to which units and which units perform which function.

- ii. As to claim 5, lines 2-4, it is not clearly understood how “at least two tasks, at least two levels, selected class and at least two task type classes” are related to each other (i.e. each selected class has at least two levels and each level has at least two tasks); lines 2-3, it is not clearly indicated what is meant by “ determines which of at least two tasks of at least two level” (i.e. determine at least two task for each level or at least two task for at least two level); lines 4-6, it is not clearly understood the

term " a next available IP resource available to a scheduler queue on which pointer to said at least two task reside" (i.e. an available IP resource will be assigned to a scheduler queue contain a pointer to said at least two tasks is assigned ?); line 11, it is not clearly understood what is meant by " transferring control from said second stage lottery program to a task found"; line 11, it is unclearly indicated whether " a task found " refers to at least two tasks in line 3.

iii. As to claim 8, lines 1-2, it is not clearly understood what is meant by " each level of said at least two levels will only have tasks of like quantum values within said each level" (i.e. tasks in each level have a quantum values?).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liana L. Fong et al. (Time-Function Scheduling: A General Approach To Controllable Resource Management, March 1995).

6. As to claim 5, Liana teaches the inventions substantially as claimed including a second stage lottery program for a dispatcher program within an operating system of a computer system wherein said second stage lottery system determines which of at least two tasks of at least two levels within a selected class of at least two task type classes will be assigned to a next available IP resource available to a scheduler queue on which pointers to said at least two tasks reside, said second stage lottery program comprising:

random number generator (page 14, line 17) and selection program for generating a random number and for selecting a one of said at least two levels within said selected class based upon a correspondence of a thereby generated random number (page 13, line 28 – page 14, line 3).

7. Liana does not explicitly teach the transfer program for transferring control from second stage lottery to a task found. However, Liana teaches that when the selecting task is selected, giving control of system to schedule the job with time-function value (page 8, lines 9-10).

8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Liana because Liana's transferring control from second stage lottery to a task found would improve the efficiency of Liana's system by minimizing the response time of interactive jobs, maximizing system throughput and processor utilization.

9. As to claims 1-4, Liana et al teach the invention substantially as claimed including: an apparatus which employs the inventive enhancements to lottery scheduling of computer process tasks (page 13, lines 23-24) substantially as described herein.

10. As to claim 6, Liana teaches a level switching routine for handling a failure by said transfer program to find a task on a selected one of said at least two levels, said level switching routine for modifying said level selecting of a one of said at least two levels by said random number generator and selection program to a second one of said at least two levels, iteratively, until a task is found on a selected level, and when a task is found, allowing transfer of control to said found task (page. 14, lines 1-19).

11. As to claim 7, Liana teaches at least two levels selected among by said random number generator and selection program are constructed wherein each next higher level among said at least two levels is two times more likely to be selected than its next lower level among said at least two levels (page. 16, line 23-page 17, line 8).

12. As to claim 8, Liana teaches each level of said at least two levels will only have tasks of like quantum values within said each level (page 16, line 22).

13. As to claims 9-11, Liana teaches each of said tasks has a quantum value, said quantum value identifying a computer system specific amount of time in which said each of said tasks with said quantum value may continuously execute on an instruction processor resource, and wherein said second stage lottery employs a quantum bias routine, said quantum bias routine comprising:

a data capture routine for determining how much of the allotted segment of a quantum a task that has executed used before returning control to said dispatcher (page 7, line 20 – page 8, line 1), and

a bias adjustment routine for adjusting a current allotted segment of a quantum identifying how much of said quantum said task that has executed has to a new allotted segment of a quantum for said a task (page 7, line 20 – page 8, line 4; page 12, lines 12-15) .

14. As to claim 12, Liana teaches a computer system having a quantum timer settable to allow processing on an IP resource for a limited duration by any task, also having an operating system having a dispatcher program wherein all said any tasks are identifiable as being members of classes (page 8, lines 14-15) and wherein said dispatcher program comprises:

a) A scheduler code section executable to determine to which of said any tasks pending in a scheduler queue that an IP resource will be next assigned to process on said IP resource and for how long said next assigned task may process on said IP resource (page 7, lines 20-22; page 14, line 1- 16), and

b) A scheduler queue from which said any tasks may be addressable and assignable to said IP resource, wherein said scheduler code section has a two stage lottery execution algorithm, a first of said two stages for determining from which class of said classes a next one of said any tasks will be selected by a second stage lottery execution algorithm to process on said IP resource (page 13, lines 28-31; page 14, line 1), said second of said two stages determining which among said any tasks that happen to be within said class will be said next assigned task (page 14, line 1-16).

15. As to claims 13-15, Liana teaches first stage lottery execution algorithm performs to choose a class randomly but with a bias settable by a user among all said classes (page 13, line 29 - page 14, line 1).

16. As to claims 16-17, Liana teaches if the scheduler code section's first of two stages selects a class which is empty of said any tasks, said scheduler code section next chooses another class of available classes (page 10, lines 1-14).

17. As to claim 18, it is rejected for the same reason as claim 1.

18. As to claims 19-20, Liana teaches a method for use by a dispatcher algorithm in an operating system in a computer system for selecting a task to

provide with an available instruction processor resource wherein said method comprises:

determining whether within a scheduler queue there are any task pointers within priority levels of a class of tasks on said scheduler queue, and if so, determining whether any said any task pointers are above a second stage lottery line, and if so assigning a first of said any tasks indicated by said any task pointers above said second stage lottery line to said available instruction resource (page 8, lines 1-18; page 10, lines 1-6), but if not,

and if there is only one said priority level having any of said any task pointers, assigning a first of said any tasks corresponding to said any task pointers at said only one said priority level to said available instruction processor resource (page 8, line 19-page 8, line 8), else,

running a second stage lottery algorithm to determine to which priority level among a plurality of said priority levels having said any task pointers said available instruction processor resource should be made available to assign to a task within said which priority level (page 13, lines 29-32).

19. As to claims 21-22, Liana teaches moving said task pointers within priority levels of a class of tasks on said scheduler queue, wherein each priority level can maintain a chain of said task pointers and wherein there are more than one of said priority levels, said task pointer moving process comprising:

maintaining a task assigned quantum which identifies for each task on

said scheduler queue a set amount of instruction processor resource to which said each task is entitled upon being assigned to an instruction processor resource (page 7, line 20 – page 8, line 1),

placing said each task into a said priority level based upon a value in said task assigned quantum for said each task (page 7, line 20- page 4), and

changing said each task priority level based on how much of said value in said task assigned quantum for said each task said each task used a last time said each task was assigned to an instruction processor resource (page 12, lines 12-15; page 15, lines 5-6).

20. As to claim 23, Liana teaches said task assigned quantum portion is assigned for said each task prior to a said task pointer being on said scheduler queue (page 7, line 20 – page 8, line4).

21. As to claim 24, Liana teaches a first stage lottery algorithm selects which of said classes of tasks on said scheduler queue will have tasks assignable to said available instruction processor resource (page 13, lines 29-32).

22. As to claims 25-26, they are rejected for the same reason as claims 19-20.

Conclusion


23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

March 31, 2005


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